NEW

LM actuator for clean-room environment

Low dust generation structure
High speeds, low particle emission, and long strokes

CGL

THK CO., LTD.
TOKYO, JAPAN

For details, visit THK at www.thk.com

*Product information is updated regularly on the THK website.
**Structure of the Model CGL**

![Diagram of Model CGL](image)

**5 main characteristics of the Model CGL**

1. Low dust emission is obtained by eliminating mutual friction generated between the metallic balls with integration of Caged-Ball Technology (LM Guide section only).
2. Suitable for utilization in clean rooms through the use of clean grease for low emission of dust particles.
3. Classification of ISO14644-1\(^1\) class 4\(^2\) (FED209E class 10 equivalent) with the utilization of THK original sealing sheet (refer to the preceding Figure).
4. It is also possible to obtain ISO14644-1\(^1\) class 4\(^2\) (FED209E class 10 equivalent) even in severe usage conditions with high speeds of 2,000mm/s, and stroke rates at 1,000mm or greater.
5. By combining the LM Guide with Ball Caged Guides and the QZ Lubricator (P.11 concerning attachment possibilities for the LM Guide and the Ball Screws\(^3\)), CGL actuators have been realized as a long-term maintenance free product.

\(^{1}\) ISO14644-1 is equivalent with JIS B9920.

\(^{2}\) Achieving the class 4 level requires suction using an vacuum fittings.

\(^{3}\) Optional
Selection of the LM Guide and Ball Screws that best suit the application requirements

[LM Guide]
It is possible to select from 2-types of LM Guides.
Model SSR: This model works best with horizontal applications due to its low cross-section compact feature and its ball contact structure that is durable against radial direction loads.
Model SHS: Due to its 4-way equal load rating features this model is able to work with multi-directional loads (radial, reverse radial and horizontal directions).

![Figure 2 Model CGL Load directions](image)

Note: The stroke range may differ according to the LM Guide type. Please check the dimensions Table.

[Ball Screw]
Table 1 lists the various options for the types of Ball Screw leads.
When operating at high speeds please select the Large lead type of Ball Screw. (Maximum Speed→P.5) Ball Screws with small leads possess a larger thrust and thus are able to transport a larger mass.

<table>
<thead>
<tr>
<th>Model number</th>
<th>Ball Screw lead (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CGL15N</td>
<td>5, 10, 16, 20, 30</td>
</tr>
<tr>
<td>CGL20N</td>
<td>5, 10, 20, 40</td>
</tr>
</tbody>
</table>
### Measurement Method

- **Testing environment:** Inside a clean bench
- **Acrylic cover**
- **Connection to vacuum pump**
- **LM actuator for clean-room environment model CGL**
- **Flow speed:** 0.25m/s
- **Measured Flow rate:** $1 \times 10^{-3}$ [m$^3$/min]

### Measurement Results

#### Evaluation results of 50-hour consecutive operations with the CGL20N-082-HV Model (Maximum speed 2,000mm/s)

![Graph showing particle emission rate and particle density](image)

- **Particle emission rate:** 0.1 or greater [pc./μm]
- **Particle density:** Upper limit cleanliness density level according to ISO14644-1

#### Evaluation result of model CGL cleanliness level

<table>
<thead>
<tr>
<th>Model number</th>
<th>Stroke [mm]</th>
<th>Speed [mm/s]</th>
<th>Acceleration/deceleration speed [m/s$^2$]</th>
<th>Vacuum rate*1 [m$^3$/min]</th>
<th>Cleanliness level*2 (ISO14644-1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CGL15N (Ball Screw lead 30mm)</td>
<td>520</td>
<td>1500</td>
<td></td>
<td></td>
<td>80</td>
</tr>
<tr>
<td>CGL15N (Ball Screw lead 30mm)</td>
<td>1134</td>
<td>595</td>
<td></td>
<td></td>
<td>48</td>
</tr>
<tr>
<td>CGL20N (Ball Screw lead 40mm)</td>
<td>520</td>
<td>2000</td>
<td></td>
<td></td>
<td>88</td>
</tr>
<tr>
<td>CGL20N (Ball Screw lead 40mm)</td>
<td>1480</td>
<td>673</td>
<td></td>
<td></td>
<td>56</td>
</tr>
</tbody>
</table>

*1 The effects of pipe flow resistance are not taken into consideration when the suction is decided. Pipe flow resistance is the resistance value arising from pipe length or pipe diameter. Please consider the effect of pipe length and diameter on pipe flow resistance.

*2 Cleanliness level varies depending on the operating conditions.

### Upper limit cleanliness density level according to ISO14644-1

<table>
<thead>
<tr>
<th>Particle diameter</th>
<th>Class 1</th>
<th>Class 2</th>
<th>Class 3</th>
<th>Class 4</th>
<th>Class 5</th>
<th>Class 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.1μm or greater</td>
<td>10</td>
<td>100</td>
<td>1000</td>
<td>10000</td>
<td>100000</td>
<td>100000</td>
</tr>
<tr>
<td>0.2μm or greater</td>
<td>2</td>
<td>24</td>
<td>237</td>
<td>2370</td>
<td>23700</td>
<td>237000</td>
</tr>
<tr>
<td>0.3μm or greater</td>
<td>–</td>
<td>10</td>
<td>102</td>
<td>1020</td>
<td>10200</td>
<td>102000</td>
</tr>
<tr>
<td>0.5μm or greater</td>
<td>–</td>
<td>4</td>
<td>35</td>
<td>352</td>
<td>3520</td>
<td>35200</td>
</tr>
</tbody>
</table>

Unit: pc./m$^3$
Product Specifications

Specification

<table>
<thead>
<tr>
<th>Model number</th>
<th>CGL15N</th>
<th>CGL20N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ball Screw lead</td>
<td>[mm]</td>
<td>5, 10, 16, 20, 30</td>
</tr>
<tr>
<td>Positioning repeatability (Note 1)</td>
<td>[mm]</td>
<td>±0.02</td>
</tr>
<tr>
<td>Effective stroke (Note 2)</td>
<td>[mm]</td>
<td>100 to 1200</td>
</tr>
<tr>
<td>Maximum speed</td>
<td>[mm/s]</td>
<td>1500</td>
</tr>
<tr>
<td>LM Guide model number</td>
<td></td>
<td>SSR15XV SSR15XW SHS15V SSR20XV SSR20XW SHS20V</td>
</tr>
<tr>
<td>Permissible Moment Load (Note 3)</td>
<td>Ma</td>
<td>85.3 119.6 163.7 166.6 242.1 353.8</td>
</tr>
<tr>
<td></td>
<td>Mb</td>
<td>60.8 81.3 155.8 115.6 167.6 335.2</td>
</tr>
<tr>
<td></td>
<td>Mc</td>
<td>76.0 115.6 203.8 131.3 190.1 378.3</td>
</tr>
<tr>
<td>Static allowance load (Note 4)</td>
<td>Radial direction</td>
<td>N</td>
</tr>
<tr>
<td></td>
<td>Reverse radial direction</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Horizontal direction</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Axial direction</td>
<td></td>
</tr>
<tr>
<td>Vacuum rate Recommendation (Note 5)</td>
<td>x10^3 [m^3/min]</td>
<td>16 to 80</td>
</tr>
</tbody>
</table>

Note 1: The positioning repeatability is measured at an ambient temperature of 20°C.
Note 2: The effective stroke is shortened in accordance with the length of the block table. See the dimensional chart for stroke details.
Note 3: Permissible Moment Load is the value obtained when the travel lifespan of LM Guide unit reaches 5000km under the conditions of the maximum travel speed and acceleration/deceleration speed (0.3G).
Note 4: Static permissible load takes into consideration the static rated load of bolt tightening strength, LM Guide unit, ball screw unit and support bearing.
Note 5: The effects of pipe flow resistance are not taken into consideration when the vacuum rates are determined.

Block Table Types

The block table types are determined in accordance with the selected LM Guide Model. Also, the stroke range may differ depending upon the block table used.

- S type: Short table (LM Guide model number: SSR-XV)
  This type makes it possible to lengthen the stroke by shortening the table length.

- L type: Long table (LM Guide model number: SSR-XW, and SHS-V)
  This product is suitable for high load levels or instances where the mass is positioned away from the center of the table.

- L-QZ type: Long table with QZ Lubricator (LM Guide model numbers: SSR-XWQZ and SHS-VQZ)
  QZ Lubricator is installed on the LM Guide and the Ball Screw. (This table is longer than the L-type table. See the dimensional table for more details.)
Maximum Speed

The maximum speed is limited by the motor rated rotational speed (3000 min⁻¹) or the permissible rotational speed of the ball screw.

Table 2 Maximum speed

<table>
<thead>
<tr>
<th>Model number</th>
<th>CGL15N</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th>CGL20N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ball Screw lead</td>
<td>5</td>
<td>10</td>
<td>16</td>
<td>20</td>
<td>30</td>
<td>5</td>
</tr>
<tr>
<td>Base length</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>340</td>
<td>240</td>
<td>500</td>
<td>800</td>
<td>1000</td>
<td>1500</td>
<td>200</td>
</tr>
<tr>
<td>460</td>
<td>260</td>
<td>520</td>
<td>790</td>
<td>180</td>
<td>260</td>
<td>740</td>
</tr>
<tr>
<td>580</td>
<td>380</td>
<td>750</td>
<td>1140</td>
<td>130</td>
<td>190</td>
<td>540</td>
</tr>
<tr>
<td>700</td>
<td>660</td>
<td>1140</td>
<td>180</td>
<td>260</td>
<td>740</td>
<td>1480</td>
</tr>
<tr>
<td>820</td>
<td>1060</td>
<td>200</td>
<td>380</td>
<td>660</td>
<td>750</td>
<td>1140</td>
</tr>
<tr>
<td>1240</td>
<td>140</td>
<td>260</td>
<td>460</td>
<td>520</td>
<td>790</td>
<td>180</td>
</tr>
<tr>
<td>1420</td>
<td>100</td>
<td>190</td>
<td>340</td>
<td>380</td>
<td>580</td>
<td>130</td>
</tr>
<tr>
<td>1600</td>
<td>100</td>
<td>190</td>
<td>340</td>
<td>380</td>
<td>580</td>
<td>130</td>
</tr>
<tr>
<td>1780</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>80</td>
</tr>
</tbody>
</table>

Unit: mm/s

Base Rigidity

The CGL Model employs a proven aluminum base type of LM actuator Model GL-N resulting in a lightweight and highly rigid product.

Figure 4 Base Section

Table 3 Geometrical Moment of Inertia and Mass in the Base

<table>
<thead>
<tr>
<th>Model number</th>
<th>Geometrical Moment of Inertia</th>
<th>Mass</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>lx [mm²]</td>
<td>ly [mm²]</td>
</tr>
<tr>
<td>CGL15N</td>
<td>1.61×10⁶</td>
<td>2.47×10⁶</td>
</tr>
<tr>
<td>CGL20N</td>
<td>3.15×10⁶</td>
<td>4.28×10⁶</td>
</tr>
</tbody>
</table>

Note 1: The LM Guide has a mass of 6.69kg/m in the case of Model SSR.

Clean Characteristics

In order to improve the clean-room performance Model CGL employs the following specifications.
Highly anti-corrosive: The LM Guide and Ball Screws are coated with THK AP-C*.
Low particle emission grease: THK AFE-CA grease* is utilized due to its superior low particle emission properties.
Vacuum fittings: Clean One-touch Fittings KPQH12-03 for its clean specifications (SMC manufacturing Corp. Tubing outer diameter φ12mm).

* Please refer to the THK general catalog (No.500) for details.
### Configuration of Numbers

**Model Number**
- CGL15N/CGL20N

**Base Length**
- Example shows 700mm length specification

**LM Guide**
- **SV**: SSR-XV (Block table S type)
- **SW**: SSR-XW (Block table L type)
- **HV**: SHS-V (Block table L type)
- Note: The block table will be the L-QZ type for SSR/SHS with QZ types. (Be aware that block table options may vary depending upon the LM Guide used.)

**LM Guide QZ Lubricator**
- No symbol: Not provided with QZ
- **Q**: Provided with QZ (SSR-XW/SHS-V only)

**Ball Screw Lead**
- **CGL15N**
  - B05: Lead 5mm
  - B10: Lead 10mm
  - B16: Lead 16mm
  - B20: Lead 20mm
  - B30: Lead 30mm
- **CGL20N**
  - B05: Lead 5mm
  - B10: Lead 10mm
  - B20: Lead 20mm
  - B40: Lead 40mm

**Ball Screw QZ Lubricator**
- No symbol: Not provided with QZ
- **Q**: Provided with QZ (Block table L Model only)

**Intermediate Flange**
- **A**: inner diameter Ø30H7, M4, PCD46
- **B**: inner diameter Ø50H7, M5, PCD70
- **C**: inner diameter Ø50H7, M4, PCD60
- **D**: inner diameter Ø70H7, M5, PCD90 (CGL20N only)
- **E**: inner diameter Ø30H7, M3, PCD45
- **F**: inner diameter Ø50H7, M4, PCD70
- **G**: inner diameter Ø34H7, M3, PCD48
- **H**: inner diameter Ø36H7, M4, mounting aperture pitch 50
- **I**: inner diameter Ø60H7, M6, mounting aperture pitch 70 (CGL20 only)
- **J**: inner diameter Ø70H7, M6, PCD90 (CGL20N only)

**Sensors**
- **N**: Not provided
- **A**: Photo sensor EE-SX-671 (3 pcs)
- **B**: Photo sensor EE-SX-674 (3 pcs)
- **C1**: Proximity Sensor TL-W3MC1 (N.O. contact [Normally open contact] 3 pcs.)
- **C2**: Proximity Sensor TL-W3MC1 (N.O. contact [Normally open contact] 1 pc.)

Note: The adhesive properties of the Sealing Sheets will be adjusted prior to shipping. Please indicate the desired Intermediate Flange type.

Please refer to the Code numbers listed in the Intermediate Flange Correspondence Table (→P.9) regarding the Motor that corresponds with each Intermediate Flange type.

For shipping with the Motor included, please contact THK.
### Dimensional Table

**CGL15N**

![Diagram of the CGL15N component showing measurements and dimensions.]

#### Dimensional Table

<table>
<thead>
<tr>
<th>Block table type</th>
<th>a (mm)</th>
<th>b (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>S type</td>
<td>43</td>
<td>21</td>
</tr>
<tr>
<td>L type</td>
<td>43</td>
<td>29</td>
</tr>
<tr>
<td>L(QZ) type</td>
<td>52</td>
<td>29</td>
</tr>
<tr>
<td>L-QZ type</td>
<td>38</td>
<td>42</td>
</tr>
</tbody>
</table>

#### Measurements and Dimensions

<table>
<thead>
<tr>
<th>L (Base length) [mm]</th>
<th>340</th>
<th>460</th>
<th>580</th>
<th>700</th>
<th>820</th>
<th>1060</th>
<th>1240</th>
<th>1420</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>S type</strong></td>
<td>130</td>
<td>250</td>
<td>370</td>
<td>490</td>
<td>610</td>
<td>850</td>
<td>1030</td>
<td>1210</td>
</tr>
<tr>
<td><strong>L type</strong></td>
<td>122</td>
<td>242</td>
<td>362</td>
<td>482</td>
<td>602</td>
<td>842</td>
<td>1022</td>
<td>1202</td>
</tr>
<tr>
<td><strong>L(QZ) type</strong></td>
<td>113</td>
<td>233</td>
<td>353</td>
<td>473</td>
<td>593</td>
<td>833</td>
<td>1013</td>
<td>1193</td>
</tr>
<tr>
<td><strong>L-QZ type</strong></td>
<td>114</td>
<td>234</td>
<td>354</td>
<td>474</td>
<td>594</td>
<td>834</td>
<td>1014</td>
<td>1194</td>
</tr>
<tr>
<td><strong>Main unit mass [kg]</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>S type</strong></td>
<td>10.2</td>
<td>11.6</td>
<td>13.1</td>
<td>14.6</td>
<td>16.0</td>
<td>18.8</td>
<td>21.0</td>
<td>23.0</td>
</tr>
<tr>
<td><strong>L type (SSR15XW)</strong></td>
<td>10.9</td>
<td>12.0</td>
<td>13.4</td>
<td>15.0</td>
<td>16.4</td>
<td>19.2</td>
<td>21.4</td>
<td>23.5</td>
</tr>
<tr>
<td><strong>L type (SHS15V)</strong></td>
<td>11.0</td>
<td>12.4</td>
<td>13.9</td>
<td>15.4</td>
<td>16.9</td>
<td>19.8</td>
<td>22.0</td>
<td>24.1</td>
</tr>
</tbody>
</table>

**Note 1:** The main unit mass includes the cover.

**Note 2:** Lubrication unit QZ is used only for the ball screw unit.

**Note 3:** Please refer to P.10 concerning the dimensions of the Intermediate Flange.
**CGL20N**

- **Mechanical stroke/2**
- **L (Base length)**
- **S type**
- **L type**
- **L(QZ) type**
- **L-QZ type**

<table>
<thead>
<tr>
<th>Block table type</th>
<th>a</th>
<th>b</th>
</tr>
</thead>
<tbody>
<tr>
<td>S type</td>
<td>37</td>
<td>25</td>
</tr>
<tr>
<td>L type</td>
<td>37</td>
<td>35</td>
</tr>
<tr>
<td>L(QZ) type</td>
<td>44</td>
<td>35</td>
</tr>
<tr>
<td>L-QZ type</td>
<td>30</td>
<td>50</td>
</tr>
</tbody>
</table>

**Unit: mm**

<table>
<thead>
<tr>
<th>L (Base length) [mm]</th>
<th>460</th>
<th>580</th>
<th>700</th>
<th>820</th>
<th>1060</th>
<th>1240</th>
<th>1420</th>
<th>1600</th>
<th>1780</th>
</tr>
</thead>
<tbody>
<tr>
<td>S type</td>
<td>238</td>
<td>358</td>
<td>478</td>
<td>598</td>
<td>838</td>
<td>1018</td>
<td>1198</td>
<td>1378</td>
<td>1558</td>
</tr>
<tr>
<td>L type</td>
<td>228</td>
<td>348</td>
<td>468</td>
<td>588</td>
<td>828</td>
<td>1008</td>
<td>1188</td>
<td>1368</td>
<td>1548</td>
</tr>
<tr>
<td>L(QZ) type [Note 2]</td>
<td>221</td>
<td>341</td>
<td>461</td>
<td>581</td>
<td>821</td>
<td>1001</td>
<td>1181</td>
<td>1361</td>
<td>1541</td>
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<tr>
<td>L-QZ type</td>
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<td>340</td>
<td>460</td>
<td>580</td>
<td>820</td>
<td>1000</td>
<td>1180</td>
<td>1360</td>
<td>1540</td>
</tr>
</tbody>
</table>

**Main unit mass [kg]**

<table>
<thead>
<tr>
<th>L (Base length) [mm]</th>
<th>460</th>
<th>580</th>
<th>700</th>
<th>820</th>
<th>1060</th>
<th>1240</th>
<th>1420</th>
<th>1600</th>
<th>1780</th>
</tr>
</thead>
<tbody>
<tr>
<td>S type</td>
<td>15.1</td>
<td>16.9</td>
<td>18.9</td>
<td>20.9</td>
<td>24.5</td>
<td>27.7</td>
<td>30.7</td>
<td>33.6</td>
<td>36.0</td>
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<tr>
<td>L type (SSR20XW)</td>
<td>15.6</td>
<td>17.5</td>
<td>19.5</td>
<td>21.5</td>
<td>25.0</td>
<td>28.2</td>
<td>31.3</td>
<td>34.2</td>
<td>36.5</td>
</tr>
<tr>
<td>L type (SHS20V)</td>
<td>16.4</td>
<td>18.4</td>
<td>20.4</td>
<td>22.5</td>
<td>26.1</td>
<td>29.3</td>
<td>32.4</td>
<td>35.5</td>
<td>37.8</td>
</tr>
</tbody>
</table>

**Notes:**
- Note 1: The main unit mass includes the cover.
- Note 2: Lubrication unit QZ is used only for the ball screw unit.
- Note 3: The maximum base length for the 10mm ball screw lead is 1420mm.
- Note 4: Please refer to P.10 regarding the dimensions of the Intermediate Flange.
Intermediate flanges are available so that various motors may be mounted. Select the intermediate flange for compatibility with the motor in use.

Note 1: The Intermediate Flange will be shipping attached to the product.
Note 2: When attaching to Motors other than those listed in the Table please contact THK.

### Correspondence Table

Table 4 Correspondence table for motors and applicable intermediate flanges

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Series</th>
<th>Model number</th>
<th>Rated output</th>
<th>Flange angle</th>
<th>CGLT5N</th>
<th>CGL20N</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>YASKAWA Electric</strong></td>
<td>Σ-V</td>
<td>SGMVJ-01</td>
<td>100W</td>
<td>□60</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SGMV-01</td>
<td></td>
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<tr>
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</table>
Table 5 Dimensional Table for the CGL15N Intermediate Flange

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Intermediate Flange dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>b</td>
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<tr>
<td>A</td>
<td>30H7</td>
</tr>
<tr>
<td>B</td>
<td>50H7</td>
</tr>
<tr>
<td>C</td>
<td>50H7</td>
</tr>
<tr>
<td>E</td>
<td>30H7</td>
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<tr>
<td>F</td>
<td>50H7</td>
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<tr>
<td>G</td>
<td>34H7</td>
</tr>
<tr>
<td>H</td>
<td>36H7</td>
</tr>
</tbody>
</table>

Unit: mm

Table 6 Dimensional Table for the CGL20N Intermediate Flange

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Intermediate Flange dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>b</td>
</tr>
<tr>
<td>A</td>
<td>30H7</td>
</tr>
<tr>
<td>B</td>
<td>50H7</td>
</tr>
<tr>
<td>C</td>
<td>50H7</td>
</tr>
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<td>D</td>
<td>70H7</td>
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<tr>
<td>E</td>
<td>30H7</td>
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<tr>
<td>F</td>
<td>50H7</td>
</tr>
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<td>G</td>
<td>34H7</td>
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<tr>
<td>H</td>
<td>36H7</td>
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<tr>
<td>I</td>
<td>60H7</td>
</tr>
<tr>
<td>J</td>
<td>70H7</td>
</tr>
</tbody>
</table>

Unit: mm
The QZ Lubricator provides a suitable amount of lubricating oil to the raceways of the LM rail.

Figure 5 Structural image of QZ Lubricator (LM Guide)

[Ball Screw]
The QZ Lubricator supplies the Ball Screw raceways with the proper amount of lubricant needed. Due to this an oil film is constantly formed along the Ball Guide surface making it possible to greatly extend the lubrication maintenance period.

Figure 6 Structural image of QZ Lubricator (Ball Screw)
Sensors

Model CGL makes it possible to attach a variety of sensor types to be used with the horizontal T slots. Please use the Code numbers listed in the correspondence table when selecting an appropriate sensor.

<table>
<thead>
<tr>
<th>Type</th>
<th>Operation mode</th>
<th>Sensor model number</th>
<th>Quantity</th>
<th>Manufacturer</th>
<th>Symbol</th>
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</thead>
<tbody>
<tr>
<td>Photo sensor</td>
<td>Switchover possible</td>
<td>EE-SX671</td>
<td>3</td>
<td>OMRON</td>
<td>A</td>
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<tr>
<td></td>
<td>Switchover possible</td>
<td>EE-SX674</td>
<td>3</td>
<td>OMRON</td>
<td>B</td>
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<tr>
<td>Proximity sensor</td>
<td>N.O. contact</td>
<td>TL-W3MC1</td>
<td>3</td>
<td>OMRON</td>
<td>C1</td>
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<td></td>
<td>N.O. contact</td>
<td>TL-W3MC1</td>
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<td>OMRON</td>
<td>C2</td>
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<td>N.C. contact</td>
<td>TL-W3MC2</td>
<td>2</td>
<td>OMRON</td>
<td></td>
</tr>
</tbody>
</table>

Note 1: The output for all sensors will be NPN.
Note 2: A sensor kit (sensor main unit, sensor dogs, etc.) is mounted on the product at the time of shipment.
Note 3: N.O. contact: Normally open contact
N.C. contact: Normally closed contact

• CGL15N

A: EE–SX671 [OMRON]
B: EE–SX674 [OMRON]
C1: TL–W3MC1
C2: TL–W3MC2 [OMRON]

• CGL20N

A: EE–SX671 [OMRON]
B: EE–SX674 [OMRON]
C1: TL–W3MC1
C2: TL–W3MC2 [OMRON]
Base-mounting Fasteners (included)

T-Nuts are included with Model CGL for attachment to the base.

<table>
<thead>
<tr>
<th>Base length (mm)</th>
<th>340</th>
<th>460</th>
<th>580</th>
<th>700</th>
<th>820</th>
<th>1060</th>
<th>1240</th>
<th>1420</th>
<th>1600</th>
<th>1780</th>
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<tbody>
<tr>
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<td>12</td>
<td>14</td>
<td>16</td>
<td>18</td>
<td>20</td>
<td>22</td>
<td>24</td>
<td>26</td>
<td>28</td>
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</tbody>
</table>

Appendix

Service Life Time and Static Safety Factor

Model CGL consists of LM Guides, a ball screw, and support units. Please refer to the necessary items (LM Guide, Ball Screws, Support Unit) in the general catalog concerning the lifespan of each component and static safety factors.

The nominal life of the LM Guides and ball screw can be calculated using the technical calculation software available from the THK Technical Support Site (https://tech.thk.com/) or contained in the CD-ROM catalog. In calculating the nominal life, refer to the data in the following table.

Note: Please note that the calculation of life is theoretical. In actual use, the life varies depending on the service conditions such as the operating environment, lubrication conditions, the accuracy or rigidity of the area where the LM actuator is installed, and so forth.

[LM Guide]
### [Ball Screw]

<table>
<thead>
<tr>
<th>Actuator model number</th>
<th>Ball screw</th>
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</thead>
<tbody>
<tr>
<td>Model number</td>
<td>L (Base length)* [mm]</td>
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<tr>
<td>CGL15N</td>
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<tr>
<td>CGL15N</td>
<td>340</td>
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<td>CGL20N</td>
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* See the Dimensional Table for L (Base length) (Pages 7 and 8).

### [Support Unit]

<table>
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<th>Support unit fixed side</th>
<th>Support unit support side</th>
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<tbody>
<tr>
<td>Model number</td>
<td>Bearing model number</td>
<td>Model number</td>
</tr>
<tr>
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<td>7000HTDFGMP5</td>
<td>GF10</td>
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<tr>
<td>CGL20N</td>
<td>7001HTDFGMP5</td>
<td>GF12</td>
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</table>

### Motor Selection

When selecting a motor for installation on Model CGL, refer to the following data. For details of the motor selection method and motor specifications, contact the motor manufacturer.

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<thead>
<tr>
<th>Actuator model number</th>
<th>Ball screw</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model number</td>
<td>L (Base length)* [mm]</td>
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<tr>
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<tr>
<td>CGL20N</td>
<td>460</td>
</tr>
</tbody>
</table>

* See the Dimensional Table for L (Base length) (Pages 7 and 8).
Precautions on Use

Handling
Please do not disassemble this product without a thorough understanding of the procedures involved. The product may become affected by the intrusion of foreign substances or may malfunction.
- Be careful not to drop or mishandle the product. Doing so could lead to injuries or damage. Further, in the event that a shock has been applied there is a possibility that the performance of the device has been damaged even if there is no perceptible damage to the external appearance.
- Do not use the device in excess of the allowable rotation rate. Doing so may cause damage to the parts or may cause an accident.
- THK assumes no responsibility or liability for damage resulting from such errors possibly contained herein.
- Contact THK for the permissible rotational speed.
- Under no circumstances should contact be made with the moving parts when operating the device or when it is in a state wherein operations are possible. Also, do not enter into the range of operations of the actuator.
- In the event that multiple parties are operating the actuator, be sure to verify the operating sequences, necessary communications and procedures in the event of a malfunction. Also, a non-participatory supervisor should be present to watch over operations.
- Do not press strongly on the sealing sheet.
- Do not use the sealing sheet in a deteriorated state.
- Due to a structure that allows for absorption of the interior of the cover, there may instances of particles adhering to the sealing sheet or nearby components. Please periodically wipe up the clean room with a wipe cloth and ethanol or similar substance.

Operating environment
Please use the product in the following locations as use in an inappropriate environment may lead to a malfunction.
- THK recommends room class 4 functions are needed, the ambient temperature is to be from -16°C to 24°C (frost does not occur at a humidity of 50%RH or less).
- When using the device in an ordinary environment (atmosphere), the ambient temperature is to be from +10°C to +40°C (frost does not occur at a humidity of 80%RH or less).
- Be careful not to drop or mishandle the product. Doing so could lead to injuries or damage.
- Please contact THK when considering usage in temperature ranges lying outside of these temperatures.
- Environments with no corrosive gases or flammable gases
- Environments with small amounts of dust, particles, salt and metallic particles.
- Environments that are not affected by water, oil or chemicals.
- Environments wherein the main unit is not affected by vibration or shock.
- For applications requiring non-traditional types of lubricants due to usage in special environments such as those that are exposed to vibrations, or in clean-rooms, vacuum rooms or locations with very high or low temperatures, please contact THK.

Mounting the actuator
- The mounting surface should be a machined surface or of equivalent roughness and accuracy. The flatness should be within 0.1mm/1000mm.
- If a system with lubrication unit QZ is used in a non-horizontal orientation (wall hanging, vertical position, etc.), contact THK.

Lubrication
- To maximize the performance of this product, lubrication is required. Using the product with insufficient lubrication may increase wear of the rolling elements or the Ball Screw section does not have a grease nipple. To lubricate, apply grease directly to the sliding surface.
- Do not mix differing types of lubricants.
- The Ball Screw section does not have a grease nipple. To lubricate, apply grease directly to the sliding surface.
- Please contact THK in the event that special lubrication is used.
- The interval for the application of grease is normally 100km. However, this may differ according to usage conditions and thus we recommend determining the greasing interval based on the results of the initial inspection.
- For applications requiring non-traditional types of lubricants due to usage in special environments such as those that are exposed to vibrations, or in clean-rooms, vacuum rooms or locations with very high or low temperatures, please contact THK.

Storage
- Please store this product in the packaging and position provided by our company in a horizontal position that avoids low and high temperatures and high levels of humidity.

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There may be differences between products appearing in photographs and the actual product.
The appearance, specifications, and other information are subject to change without prior notice to improve reliability, function, etc. When deciding to adopt the product, contact us beforehand.
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We employ the basic policy of observing the Foreign Exchange and Foreign Trade Control Law of Japan with regard to the export of our products/technologies or sales for export. For export of our products as discrete components, consult THK beforehand.

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Global site : http://www.thk.com/

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